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**Before the**
**FEDERAL COMMUNICATIONS COMMISSION**
**Washington, D.C. 20554**

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| In the Matter of | ) | |
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| Allocation of Costs Associated with | ) | CC Docket No. 96-112 |
| Local Exchange Carrier Provision | ) | |
| of Video Programming Services | ) | |

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# COMMENTS OF CONTINENTAL CABLEVISION, INC.


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## COMMENTS OF CONTINENTAL CABLEVISION, INC.

## I. INTRODUCTION AND SUMMARY

Continental Cablevision, Inc. is the third largest multiple cable system operator, serving approximately 4.2 million customers in some 900 franchise areas across the United States.

Continental applauds the Commission's efforts in its Notice of Proposed Rulemaking in this docket[1/] to revise its Part 64 cost allocation rules to take into consideration the need to address efforts by telephone companies to build hybrid plant to be used for both non-regulated video and regulated (Title II) telephony purposes, as envisioned by the 1996 Telecommunications Act ("1996 Act"). Continental has recently filed comments in the FCC's Open Video Systems rulemaking that deals with one of these options for participation by telephone companies in the video marketplace.[2/] As incumbent local exchange carriers

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[1/] See Allocation of Costs Associated with Local Exchange Carrier Provision of Video Programming Services, Notice of Proposed Rulemaking, CC Docket No. 96-112, FCC No. 96-214, (rel. May 10, 1996) ("NPRM").

[2/] Comments of Continental Cablevision, Inc. CS Docket No. 96-46 (filed March 29, 1996).

("LECs") enter the video marketplace through the various mechanisms delineated by the 1996 Act, it is critical that the Commission address this bedrock issue.

We agree that the Commission's cost allocation processes should not enable incumbent LECs to impose on ratepayers "the cost and risks of competitive, nonregulated ventures, including nonregulated video service ventures."[3/]

By adopting a clear and reasonable process for the allocation of costs associated with LEC provision of non-regulated video services, the FCC will promote the critical goal of competitive equity. This will ultimately redound to the benefit of consumers and promote the facilities-based competition envisioned in the 1996 Act.

The Commission is correct in proposing to simplify the process through the use of a gross allocation factor, particularly for the loop plant, the bulk of investment at issue. This is the most critical portion of the telephone company's joint plant and the area where misallocation is most likely. Indeed, an administratively-simple cost allocation method will be able to guide regulators and competitors alike and make unnecessary the extensive filings and debate on this issue that for years permeated the video dialtone process.

Continental demonstrates in these comments that, based on its own experience in deploying hybrid fiber/coaxial cable ("HFC") facilities, the allocation factor should be weighted overwhelmingly towards the LEC's video business. As demonstrated by the attached affidavit of David M. Fellows, Continental's Senior Vice President of Engineering and Technology, in the deployment of an HFC system, the most commonly used architecture

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[3/] NPRM at ¶ 24. See also Section 254 of the Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56, § 254 (1996).

by cable companies and phone companies, telephone services occupy less than 5% of system capacity. This is consistent with the fact that this new broadband plant is being constructed by the LECs principally for the purpose of video delivery and will be used almost entirely for those purposes. Thus, in devising the allocation factor, the Commission should reference the true utilization of these joint-use networks and adopt rules that recognize that the bulk of the capacity of HFC facilities, whether primarily analog video with some digital video and digital voice or switched video that is 100% digital, will be used for non-regulated, non-Title II purposes.

The FCC also proposes rational solutions for the allocation of other telephone company costs, although some variations may be appropriate to the extent there is evidence of skewed outcomes. Specifically, Continental supports the FCC's proposal regarding the allocation of spare capacity principally to the unregulated side of the ledger. In Continental's experience, only a fraction of spare capacity is related to regulated, Title II telephony services.

Finally, the Commission should stress the importance of full and accurate information from the LECs regarding their costs so that the Commission, and interested parties, can insure that the rules that are adopted are adhered to fully.

## II. BASED UPON CONTINENTAL'S EXPERIENCE, ONLY A SMALL PORTION OF HFC LOOP PLANT CAN BE ALLOCATED TO TELEPHONY ON A COST-CAUSATION BASIS

Continental's comments are focused on the issue of cost causation as derived from its actual operation of HFC networks, the kind most telephone companies are constructing for the dual purposes of carrying regulated and nonregulated services.[4/] Since 1993, Continental has been engaged in the process of rebuilding and upgrading its cable systems using state-of-the-art HFC networks. In addition, in Australia, Continental is constructing the world's most extensive HFC network in a joint venture with that country's largest alternative long distance carrier.[5/]

Based on this experience, David M. Fellows, Continental's Senior Vice President for Engineering and Technology addresses in the attached affidavit the proportion of loop plant Continental has found is related to video delivery and the proportion that is related to telephony uses. Mr. Fellows attests that generally there are two scenarios that will arise for the joint-use of HFC networks for regulated telephony and non-regulated services (the overwhelming majority of which will be video services).[6/] These include systems that will

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[4/] See, e.g., In Re Applications of Pacific Bell, File Nos. 6913-16, Order and Authorization, FCC No. 95-302 (rel. August 15, 1995) ("Pacific Bell Order"); see also The Application of the Southern New England Telephone Company for Authority Pursuant to Section 214 of the Communications Act of 1934, as Amended, to Construct, Operate, Own, and Maintain Facilities to Test a New Technology For Use in Providing Video Dialtone Service in Specific Areas in Connecticut, 9 FCC Rcd 7715 (1994). Significantly, the fundamental conclusion that the bulk of HFC costs are properly allocated to non-regulated services is the same regardless of the particular manner in which HFC facilities are deployed. See Affidavit of David M. Fellows, attached hereto.

[5/] See Affidavit at ¶ 15.

[6/] See Affidavit at ¶ 17-18.

carry analog video with perhaps some digital video and digital voice[7] and systems that will be 100% digital, sometimes referred to as "switched digital video."[8] Under either scenario, telephony uses require only a fraction of the capacity of the facilities.

Significantly, in what appears to be the most likely scenario, the analog video model, Continental has found that the system requires only 4-16 MHz for telephony uses out of a total of 750 MHz, depending upon the number of homes served and the degree of fiber in the network. As fiber is deployed closer to the home, the relative bandwidth necessary for telephony purposes decreases, causing telephony services to account for usage closer to the 4 MHz range. Even under the most conservative scenario for this network configuration, then, the ratio of video to telephony service capacity utilization is 45:1.[9]

Alternatively, the LECs may seek to deploy a "switched digital video" architecture for the integrated networks. Under this scenario, Title II voice telephony services utilize roughly 64 kbps while video services require roughly ten times that much or 64 Mbps, or a 100:1 ratio of video to voice.[10] Therefore, under either scenario, telephone services would utilize less than 5% of system capacity.

What is noteworthy is that the overarching utilization of these networks is not for regulated telephony services but rather for competitive services such as video, which should

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[7] See Affidavit at ¶ 18. The system that is being deployed by the Southern New England Telephone Company ("SNET") is an example of this type of system.

[8] Id. at ¶ 17. Bell Atlantic has deployed such a system in New Jersey for its Dover Township video dialtone services.

[9] See Affidavit at ¶ 23.

[10] See Affidavit at ¶ 17.

be underwritten not by the monopoly telephone ratepayer but by willing investors. Given Continental's firsthand knowledge and experience regarding the utilization of HFC networks, it appears that the telephone companies' proposals to allocate the bulk of their joint plant costs to regulated telephony services during the video dialtone process were far more skewed towards requiring telephone ratepayers to support their entry into the video services field than initially believed.

Critically, the proposal to use a 50/50 allocator is fundamentally flawed.[11/] Even assuming that the relative allocation proposed by SNET would result in a true 50/50 split of common costs, which is not clear based upon the scant information that was presented when SNET made this proposal,[12/] it appears that the rationale for this allocator is that the costs should be shared equally between voice and video services. While superficially appealing, the FCC should reject this suggestion as it is not based on any reasoned principle. Indeed, SNET ignores the fact that there may be other services that utilize the HFC facilities. For instance, if data and telemetry service (such as meter reading) were offered, would SNET then advocate a 25/25/25/25 allocation? If the FCC is to adopt a rational approach, it must

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[11/] NPRM at ¶ 39. See Affidavit at ¶¶ 24-25

[12/] See Application of SNET Personal Vision, Inc. for a Certificate of Public Convenience and Necessity to Operate a Community Antenna Television System, Docket 96-01-24, State of Connecticut, Department of Public Utility Control, January 25, 1996, as amendment April 30, 1996.

ground its decision in some relative measure that is based upon real usage. Since video is the driver of these networks,[13] the FCC should devise rules accordingly.

Simply put, in devising its allocation factor, at a minimum, the FCC should be guided by this real world experience which clearly reveals that Title II telephone services will occupy only a telephone company's total HFC plant bandwidth. While there may be policy reasons for the FCC to adopt an allocation factor that requires telephone ratepayers to bear a greater portion of the networks' costs than are strictly derived from actual capacity utilization, the FCC should strive to establish a factor that is tied to actual usage. In this way, investment decisions will be least likely to be skewed by false economic signals. Having now lifted up this rock by examining the deployment and uses of similar HFC networks, we urge the FCC not to fear confronting the truth of what is under it.

## III. THE FCC PROPOSES A RATIONAL APPROACH TO OTHER ALLOCATION ISSUES

The Commission also asks whether it should allocate other network-related expenses, maintenance expenses, marketing expenses and overheads based on a general allocator or on much more specific criteria, including usage-based measures. Here too, the Commission should seek to develop an administratively-workable solution that is grounded in sound economics and that promotes the Commission's policy goals. Whatever the basis for such an allocation, however, Continental believes that, in at least some instances, the FCC should

[13] It is well recognized that the only likely successful application for these networks is video services. See e.g., Crandall and Waverman, Talk is Cheap: The Promise of Regulatory Reform in North American Telecommunications, Brookings Institution, 1995, at 255.

telephone ratepayers will bear an inappropriate portion of the LEC's costs in that category.

Continental also strongly supports the FCC's approach to the issue of allocation of costs of spare facilities. The Commission notes that in the past, spare facilities were not such a substantial portion of the network plant as during the past few years. With the LEC's total spare fiber totalling between 63% and 70% between 1991 and 1994, there is a very high risk that this spare capacity could be used, and is likely to be used, for video and other non-regulated (non-Title II) services. There is no basis whatsoever for requiring monopoly telephony ratepayers to bear these costs. As the attached affidavit indicates, in Continental's own experience, the bulk, if not all, spare capacity on the HFC system is attributable to non-Title II uses.

In the building of its own HFC networks, Continental anticipates that the vast majority of its spare capacity will be used for near-video-on-demand and other advanced video-based services.[14/] Given the relatively small amount of capacity that is necessary for telephone services, the FCC should conclude that the spare facilities are being deployed primarily for non-regulated competitive purposes. Where a LEC's unused capacity is so likely to be used for video or other unregulated services,[15/] telephone ratepayers should not be asked to bear the costs.

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[14/] See Affidavit at ¶ 26.

[15/] In fact, every indication is that the LECs have similar business plans. See e.g., Statement of Ronald Serrano, SNET, Conn. DPUC Docket 95-03-10, Transcript at 782-85 (stating that SNET intends to offer a multitude of broadband services, including games and movies, that cannot be delivered without the HFC network).

likely to be used for video or other unregulated services,[15] telephone ratepayers should not be asked to bear the costs.

## IV. THE COMMISSION MUST INSIST ON ACCURATE COST DATA FROM THE LECS TO MAKE THIS PROCESS WORK

Fundamental to the FCC's NPRM is the presumption that the LECs will comply with the cost allocation principles the FCC adopts. The Commission should make clear in its order adopting these rules and principles that it will sanction severely any deviation. Otherwise, the LECs will be tempted to game the process in order to gain an unfair advantage in the video business.

In order to assess LEC compliance, it is critical that the FCC require incumbent LECs that deploy joint-use networks to provide complete and accurate data regarding their costs. The Commission should underscore that it will not tolerate a repeat of the video dialtone process. There, many LECs had to be compelled to provide the FCC with sufficient data so that the Commission could discern how costs were allocated. Now, as the FCC adopts a general allocator, it remains equally important for there to be complete data to ensure that the rules are followed.

## V. CONCLUSION

For the above reasons, Continental urges the FCC to adopt a fixed allocator for the allocation of costs between telephone company video and voice services. That allocator should reflect actual bandwidth use by telephone, video and non-regulated services. Based

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[15] In fact, every indication is that the LECs have similar business plans. See e.g., Statement of Ronald Serrano, SNET, Conn. DPUC Docket 95-03-10, Transcript at 782-85 (stating that SNET intends to offer a multitude of broadband services, including games and movies, that cannot be delivered without the HFC network).

on HFC architecture that is being deployed today. whether analog or switched digital, telephone services utilize less than 5% of available system capacity. Setting a fixed allocator will provide a simplified method of resolving this highly contested issue, and allow the competition between telephone company video services and cable company video services to shift to the marketplace, rather than remain in the regulatory jousting arena. Continental also asks the FCC to allocate LEC spare capacity wholly or principally as unregulated costs, and to signal the seriousness with which it regards compliance with its cost allocation processes.

Respectfully submitted,

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May 30, 1996

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## CERTIFICATE OF SERVICE

I, Cheryl S. Flood, hereby certify that on this 30th day of May, 1996, I caused copies of the foregoing "Comments of Continental Cablevision, Inc." to be sent by messenger to the following:

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## AFFIDAVIT OF DAVID M. FELLOWS

### Introduction

1. My name is David M. Fellows. I am Senior Vice President of Engineering and Technology at Continental Cablevision, Inc. ("Continental"). I have held my current position since 1992. I am Continental's senior corporate officer responsible for Continental's engineering and technology applications. Among other duties, I oversee the design and construction of Continental's broadband hybrid-fiber-coaxial ("HFC") cable networks. In addition, I currently chair the CableLabs Task Force on Multi-Media, serve as the Vice Chairman of the CableLabs Technical Advisory Committee, and head the Society of Cable and Telecommunications Engineers Data Standardization efforts.

2. Prior to joining Continental, I served from 1987 to 1992 as President of Scientific Atlanta's Transmission Systems Business Division, with responsibility for headend, fiber optic and digital compression products. From 1985 to 1987, I served as the Vice President of Technology for Siemens Transmission Systems. From 1983 to 1985, I served as Vice President of Research and Development for GTE's Lenkurt Division. I also served as a member of GTE's Corporate Business Equipment Strategy Team and GTE Lab's Technical Staff from 1976 to 1983.

3. I have been awarded patents for my work on the transmission of telephone communications over broadband HFC networks, and on the transmission of digitally compressed signals over "twisted pair" lines. United States Patent No. 5,499,241, which was granted in March 1996, forms the basis for Scientific Atlanta's CoAxiom HFC telephony product, being jointly developed with Siemens Corporation. My first patent, granted for work at GTE

Laboratories in the 1970's. dealt with the detection of digital signals on twisted-pair wiring (before ISDN), and powering up CPE equipment (what now would be called an NIU or Network Interface Unit).

4. The purpose of this affidavit is to provide information to assist the Federal Communications Commission ("Commission") in resolving questions raised in the Notice of Proposed Rulemaking ("NPRM") in Common Carrier Docket No. 96-112, which addresses, for incumbent local exchange carriers, issues of cost allocation between telephone and video services using common facilities.

5. The NPRM specifically requested a recommendation on an appropriate fixed allocator for common loop plant. The NPRM also requested comment on possible use of a 50/50 fixed allocator for common loop facilities, footnoting the testimony of witnesses Clark and Davis on behalf of The Southern New England Telephone Company in Application of SNET Personal Vision, Inc. for a Certificate of Public Convenience and Necessity to Operate a Community Antenna Television System pending before the Connecticut DPUC, Docket 96-01-24 ("SNET Application").

6. In this affidavit, I first provide a brief background on the different communications infrastructures built by telephone companies and by cable television companies. Next, I describe why the historic twisted-pair plant of telephone companies is incapable of efficiently transmitting video signals. Thereafter, I describe the basic components of HFC systems commonly deployed for the integrated delivery of video and voice services, and explain the need for telephone companies to deploy HFC in order to deliver video and telephone service

over the same plant. Finally, I respond to the NPRM's specific request for a recommendation of a fixed allocator for allocating the costs of common telephone loop plant.

## Background

7. Historically, two separate communications infrastructures were constructed in America, one by telephone companies and the other by cable television companies. On the one hand, telephone companies constructed a national phone system using "twisted pair" copper lines for the transmission of switched, two-way narrow-band voice communications. On the other hand, the typical system built by cable companies carried one-way video signals over high-capacity coaxial cable. Even though most early cable systems offered only some ten to twelve channels, those coaxial cables still had a electrical signal carrying capacity 20,000 times larger than telephone wires.

8. As described below, the twisted-pair distribution system of the telephone companies is perfectly capable of carrying voice conversations, but is not well suited for carrying video. But for the desire of telephone companies to carry video and non-voice services, their deployment of HFC plant would not be necessary.

9. Video can be delivered to the home in one of two formats: analog or digital. Cable companies historically have delivered video in an analog format, compatible with the more than one hundred million television sets in America. In the analog format, a video channel occupies just under 6 MHz of bandwidth, and individual channels are spaced 6 MHz apart. The analog video signal, however, occupies too much bandwidth and is too fragile to be carried over the installed base of telephone twisted pair copper wiring. Thus, in order to deliver video,

telephone companies must utilize either a combination of fiber and coaxial cable (e.g., HFC), as described in more detail below, or must convert the video signals to a digital format and reconvert the signal to an analog format just before reaching the television set (e.g., ADSL), which is an expensive solution.

10. Because of the economic drive to be compatible with analog TV's, telephone companies such as PacBell (in the Bay Area), SNET (in Connecticut), and Ameritech (in Illinois, Michigan, and Ohio), have used or are planning to use HFC plant to deliver video services.

## HFC System Architectures

11. The term "HFC" is actually a generic description of state-of-the-art communications plant architecture which includes several subcategories such as fiber to the serving area, and fiber to the curb. Regardless of the architecture label applied to a particular system, however, all HFC systems have the same basic components. As deployed by Continental and other cable companies, HFC arrangements typically involve use of a fiber optic backbone connecting headends, as well as the deployment of fiber plant deep into the distribution network. The fiber carries signals from the headend directly to a neighborhood node, typically serving between 500 and 2,000 homes. At that point the optical signal is converted to an electrical signal and transported over coaxial cable for the last half-mile or so to the home. Using a variation of HFC, telephone companies may deploy fiber to nodes serving less than 500 homes, or even all the way to the curb (known as fiber-to the curb, or switched digital video with an analog overlay). The share of HFC bandwidth capacity which will be used by voice

services, however, is extremely small regardless of whether fiber is employed to 2,000 home nodes or all the way to the curb.

12. When used, as indicated above, fiber improves picture quality and enhances cable system reliability. Indeed, the benefits of fiber plant in minimizing signal loss are striking. Fiber is approximately seventy times more efficient than coaxial cable. With fiber, only half of the light signal is lost over four miles, whereas coaxial cable loses half of the electrical signal in 300 feet. Given this superior performance, fiber obviates the need for amplifier cascades used with coaxial trunk runs. As an example, an HFC system extending twenty-one miles from a headend to the farthest system point typically has six amplifiers in any cascade, compared to approximately forty-five amplifiers in old trunk and feeder coaxial systems. While amplifiers have the benefit of boosting the signal over greater distances, they have the detriment of adding noise and introducing additional potential points of failure on the system.

**Continental's Experience With HFC Plant**

13. Continental currently serve more than 4.2 million customers in approximately 900 franchises in twenty states. Today, an average Continental system with 62 or more channels can carry more than 100,000 times as much information as conventional telephone lines (450 megahertz ("MHz") versus 4 thousand Hertz ("kHz") Still, since 1993, Continental has been in the process of rebuilding and upgrading its domestic cable systems using state-of-the-art HFC architecture. As described above, deployment of HFC plant increases video channel capacity, improves picture quality and enhances reliability

14. Under its Social Contract with the FCC, Continental will spend $1.35 billion in upgrading and rebuilding all its domestic systems with state-of-the-art HFC plant by the year 2000. Continental's 1995 investment in upgrading and rebuilding its domestic cable systems was more than $370 million. Rebuilds completed or commenced in 1995 already have affected over 1.1 million Continental customers.

15. In addition, as a 46.5 percent owner in Optus Vision, a joint venture with Optus Communications, the largest alternative long-distance carrier in Australia, Continental is constructing an advanced HFC network in key Australian markets to offer customers choice in local and international television and as well as in local phone service. When completed in 1998, the network will serve 2-3 million Australian homes. It will be the first system in the world to deliver local phone service exclusively over an HFC network. Local telephone service will be commenced during the second half of 1996.

## Use of Common HFC Loop Plant

16. For the reasons discussed below, a 50/50 split between telephony and video services substantially overstates the relative share of HFC capacity which will be used by telephone service on the one hand, while substantially understating the bandwidth which will be used for video and additional unregulated services on the other.

17. Video and voice signals will share the common HFC plant leading to the home. If both signals are analog, voice signals will occupy 4 kHz, and a video signal (one cable channel) will occupy 6 million Hertz, or one thousand times as much bandwidth. If both signals are digital, (i.e., a switched digital video system), voice will occupy 64 kbps, while video will

occupy 6.4 Mbps, or one hundred times as much bandwidth. The reason for the factor of ten difference in the voice vs. video ratio between analog and digital transmission is the result of the sophisticated compression which occurs with a digital video signal (e.g., MPEG2).

18. The most likely scenario for the initial use of common HFC plant is that most video signals will be carried in an analog format, and voice will be carried in a digital format. The process of translating a digital signal into an occupied analog bandwidth is called "modulation." The Lucent product planned for use by PacBell translates about twenty-four voice conversations into 2 MHz of bandwidth (or seventy-two voice conversations per 6 MHz). The ADC product used by Optus Vision translates about two hundred voice conversations into 6 MHz. So, in a real world deployment, a 6 MHz "channel" will carry between seventy two and two hundred telephone calls.

19. The relative share of HFC bandwidth occupied by video and voice will be affected by the number of customers using each service and the duration of use. Because not all telephone customers use their telephones at the same time, the HFC bandwidth occupied by voice will be economized using a technique known as "concentration." For example, in a node of 500 telephone subscribers, not all will be "off-hook", or making telephone calls at the same time. Accordingly, twenty-four voice channels may be enough to serve 120 subscribers, because only one out of five customers will try to make phone calls at the same time. In providing voice service to all 500 potential customers in a 500 home node, an HFC system would utilize 6 MHz to 8 MHz of bandwidth in each direction depending on whether Lucent or ADC modulation (to pick two examples from many suppliers) is used. Because telephone calls are two-way (while most video is one-way), the total HFC bandwidth occupied for the delivery of voice will reach

16 MHz upon full deployment of voice services to all customers. Initially, voice services provided by a cable company would occupy far less than 16 MHz, growing along with voice penetration. A telephone company would start at the maximum 16 MHz and shrink over time as it loses customers.

20. Further, it is an interesting phenomenon that the deeper fiber is deployed into an HFC system (e.g., to nodes serving fewer homes), the less bandwidth will be occupied by voice signals. This is because less bandwidth is needed to serve the fewer number of telephone lines in a smaller fiber pocket. In the case of fiber-to-the-curb, the twelve or twenty-four homes served would only require 4 MHz bandwidth to enable all homes to make telephone calls simultaneously.

21. In contrast to the extremely small share of bandwidth which will be utilized to deliver voice, each analog video channel requires 6 MHz of bandwidth. To save on bandwidth, video signals are broadcast to all homes in the fiber pocket. Using the fiber-to-the curb example above, all twelve to twenty-four homes still want the choice of 60 to 80 channels. In a typical system with 60 to 80 channels, the total bandwidth occupied by video services is 400 to 500 MHz (an additional 50 MHz - 60 MHz may be occupied by channel offset requirements, reverse spectrum, crossover filters, etc.).

22. In addition, even if data signal transmission is included with the bandwidth occupied by voice, the non-video share of occupied bandwidth will be exceedingly small. Depending on the particular modem vendor, cable modems send between 10 Mbps and 27 Mbps downstream from the headend to the home (occupying 6 MHz downstream), and 768 kbps to

10 Mbps upstream from the home to the headend (occupying between 2 MHz and 6 MHz upstream). Our planning has a total of 24 MHz set aside for high speed data services.

23. As demonstrated by the foregoing factors, telephone service will occupy a very small portion of HFC bandwidth. Based on engineering principles, in an analog-to-analog comparison, video occupies one-thousand times more capacity than voice services (roughly 6 MHz versus 4 kHz). In a comparison of digital voice and digital video, video occupies one hundred times as much capacity (roughly 6.4 Mbps versus 64 kbps). In the "real deployment" of an HFC system, telephony services will occupy only up to 16 MHz of a 750 MHz system, and video and other non-voice services will occupy the rest. This results in a video/non-video ratio of 45 to 1 (734/16).

24. In light of the foregoing, a 50/50 allocation of common loop telephone plant costs is clearly inappropriate. The 50/50 allocation recommended by witnesses Davis and Clark in SNET Personal Vision's pending application at the Connecticut DPUC is based on the assumption "that each customer has both telephony and cable service," and that there will be "one cable line for each phone line." The witnesses indicated this approach would reflect "a maximum potential relative use of one cable access line for each telephone access line." SNET Application at 9, 11.

25. A 50/50 allocation of common costs based on an assumed parity in the number of telephone and cable lines would not be reflective of the way HFC architectures are constructed or will be utilized for the delivery of telephone and video services in the real world. Rather, the above discussion demonstrates that a maximum of 16 MHz of HFC bandwidth will be used for telephony, and 550 MHz or more will be used overwhelmingly for video.